6-6 Analyzing Graphs of Quadratic Functions

Vertex Form

$y = a(x-h)^2 + k$

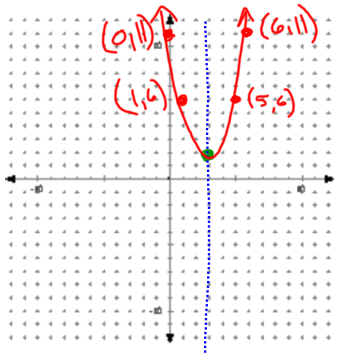
Vertex (h, k)
a.o.s. x = h

Write the equation in vertex form.

ex
$y = x^2 - 6x + 11$

$y - 11 = x^2 - 6x + 9$
$+9$
$y - 2 = (x-3)^2$
$y = (x-3)^2 + 2$
$V(3,2)$ a.o.s $x = 3$

Graph it!



h translates the graph horizontally

k translates the graph vertically

a controls the direction and opening

Write the equation in vertex form.

ex

$y = 3x^2 + 2x$

$y = 3(x^2 + \frac{2}{3}x + \frac{1}{9}) + \frac{1}{3}$

$y + \frac{1}{3} = 3(x + \frac{1}{3})^2$

$y = 3(x + \frac{1}{3})^2 - \frac{1}{3}$

Write the equation in vertex form.

ex

$y = -2x^2 + 20x - 35$

$y + 35 = -2(x^2 - 10x + 25)$

-50

$y - 15 = -2(x - 5)^2$

$y = -2(x - 5)^2 + 15$

Write the equation in vertex form.

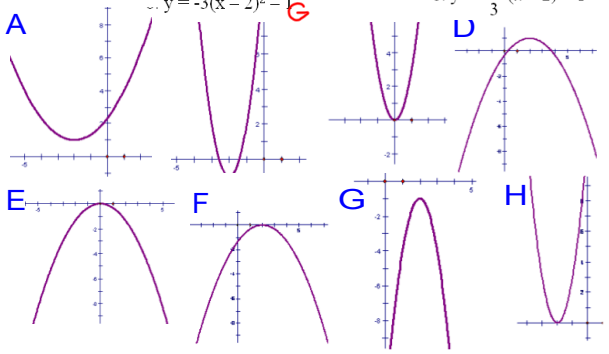
ex

$y = 4x^2 + 2$

$4(x + 0)^2 + 2$

Matching

1. $y = 3x^2$ C
2. $y = \frac{-1}{3}x^2$ E
3. $y = 3(x + 2)^2$ H
4. $y = 3(x + 2)^2 - 1$ B
5. $y = \frac{1}{3}(x + 2)^2 + 1$ A
6. $y = -3(x - 2)^2 - 1$ G
7. $y = \frac{-1}{3}(x - 2)^2$ F
8. $y = \frac{-1}{3}(x - 2)^2 + 1$ D



HW
p326
15-31 odd